

Abstract

Siliceous materials were prepared by adding one or more additives, including one or more water soluble polymers, and derivatives thereof, as well as trifunctional silanes, to sols containing tetraalkoxysilanes derived from polyols. The polymers facilitate phase separation of the growing silica gel matrix, leading to high surface area self-supporting silica gels with cure occurring at ambient temperatures. The materials also show a significant reduction in shrinkage properties and significant protein stabilization abilities.